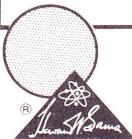


PHOTOFAC[®] FolderROBERTS
MODEL 192FTROBERTS
MODEL 192FT

TRADE NAME	Roberts Model 192FT	
MANUFACTURER	Roberts Electronics, Inc., 5920 Bowcroft Street, Los Angeles, California	
TYPE SET	AC Operated 5Tube-1 Transistor, Single Track Monaural Tape Recorder (Units are available for 2-track monaural operation)	
POWER SUPPLY	105-120 Volts AC, 60Cycles	RATING 60 Watts, .58 Amp @ 117VAC (With Deck) 35 Watts, .33 Amp @ 117VAC (Amp Only)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part.



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SPECIFICATIONS

FREQUENCY RESPONSE:

40 to 15,000 cps at 7 1/2 ips \pm 2 db; 40 to 9,500
cps at 3 3/4 ips \pm 3 db.

SIGNAL-TO-NOISE RATIO:

55 db below recorded "0" level.

WOW AND FLUTTER:

Less than 0.18% rms.

HEADS:

Full-track erase and record/playback in shielded
housing.

OUTPUT:

6 watts undistorted.

REEL SIZE:

7" maximum (up to 2400 ft. of tape).

POWER REQUIREMENTS:

95 to 120 volts AC, 60 cycles, 50 watts.

SIZE:

15 3/4" x 14 1/2" x 9 1/2".

WEIGHT:

Approx. 28 lbs.

PREPARING FOR OPERATION

1. Remove lid from carrying case.
2. Remove microphone and AC supply cord from storage compartment on left side of carrying case.
3. Make certain all controls are in the neutral position.

FUNCTION OF CONTROLS

On-Off Switch

When the switch is pushed to the All-On position, power is turned on to the amplifier and tape deck. When the switch is in the Amp-Off position, power is applied to the tape deck only. The Off position turns the power off to the entire unit.

Volume

Turning this control clockwise increases the volume during playback and the recording level when recording.

Tone

This control functions in playback only. Turning the control clockwise increases the high frequency response and turning the control counterclockwise attenuates the high frequency response.

Play-Record and Record Lock

This is a 3-position control: Stop, Play, and Record. Turning this control clockwise from the Stop

position, places the unit in play. Depressing the Record Lock and turning the control to the Record position at the same time, places the unit in Record.

NOTE: This control is interlocked with the Rewind-Forward control. It must be in the Stop position before the Rewind-Forward control can be operated.

Rewind-Forward

Turning this control to the left places the unit in the Rewind mode; to the right places the unit in Forward mode of operation.

NOTE: This control is interlocked with the Play-Record control. It must be in the Stop position before the Play-Record control can be operated.

Pause

When this lever is raised, pressure is removed from the capstan, and the take-up reel is disengaged. This permits spot editing and momentary stops.

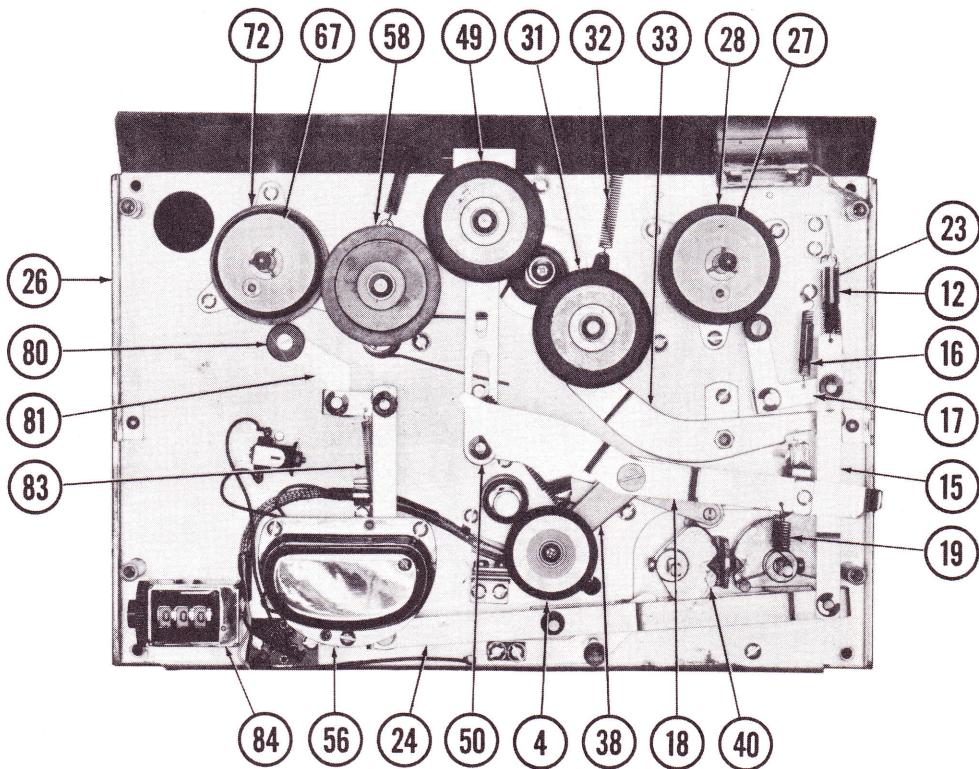


Fig. 1. Top View of Tape Transport Mechanism.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a full reel of tape on the supply reel spindle (27), making certain the reel slots engage the protrusions on the pan. Place an empty reel on the take-up spindle (67), again making certain the slots engage the protrusions on the pan.
2. Unwind about 14 inches of tape from the supply reel. Hold a section of tape taut and insert into the tape slot, making sure the dull-coated side faces the rear of the recorder.
3. Insert the free end of the tape into one of the slots in the hub of the take-up reel. While holding the end in place, rotate the reel to secure the tape and take up any slack.

To Make a Recording

1. Plug a microphone into the Microphone jack. Place the High Z Mic—Low Z Mic switch in the proper position to match the impedance of the microphone.
2. Place the Pause lever in the Up position; depress the Record Lock button and at the same time rotate the Play-Record control to the Record position.
3. Preset the recording level by adjusting the Volume control until the indicator goes up to the

red portion of the scale but does not enter the red portion except on loud passages.

CAUTION: Do not connect a speaker or other low impedance load to the Output jack while making a recording.

To Play Back a Tape

1. Thread the tape as described under "Threading the Tape".
2. Turn the unit on and allow a few seconds for it to warm up.
3. Turn the Play-Record control to Play.
4. Adjust the volume and tone to the desired listening level.

Speed Change

To change the tape speed from $7\frac{1}{2}$ to $3\frac{3}{4}$ ips, remove the thumbscrew and bushing from the capstan. When the bushing is not being used, store it on the bushing post.

Index Counter

After a tape is threaded on the recorder, set the index counter to "000". The index numbers can then

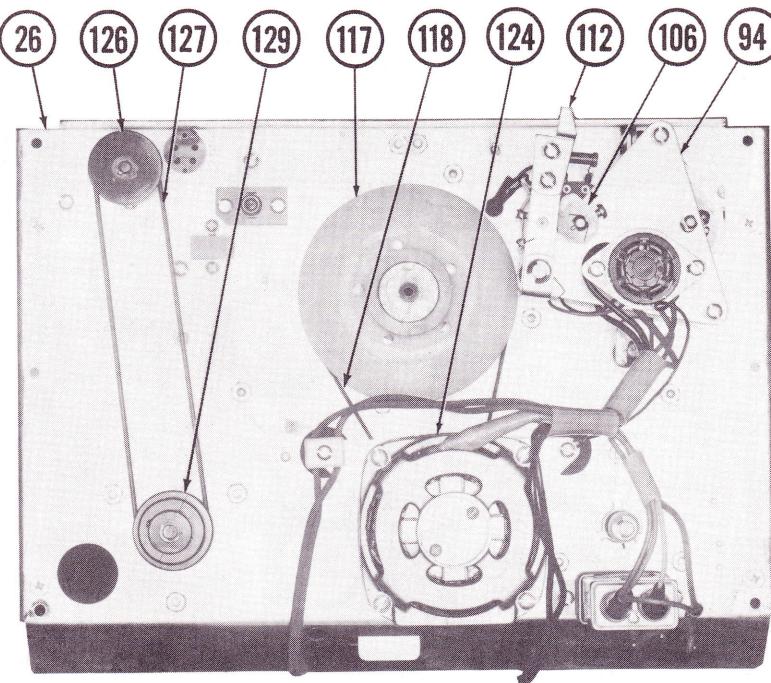


Fig. 2. Bottom View of Tape Transport Mechanism.

be noted at the beginning of each selection for future reference.

External Speaker

An external speaker may be plugged into the "8 Ohm Out" jack. The internal speaker will be disconnected when using an external speaker.

Erasing a Tape

To erase a tape without putting a new recording on it, turn the Volume control to minimum and the Play-Record control to Record.

To Record from a High Signal Level Source

To record from a radio, TV receiver, or tuner, plug the signal source into the Rad-Phono jack. Use the same recording procedure as described under "To Record from a Microphone".

DISASSEMBLY

To Remove Tape Transport from Case

1. Remove the two screws in the spindle pans (one in each pan).
2. Remove the two screws holding the dress plate and remove the dress plate.
3. Remove one screw on the right side of the escutcheon and the 7 1/2 ips bushing from the left side.
4. Remove the pressure roller.
5. Remove the Play-Record and Rewind-Forward knobs.
6. Remove the escutcheon.

7. Remove the four screws holding the transport to the case.
8. Unplug all connections to the tape transport and speaker and lift the transport from the case.
9. To reassemble, reverse the foregoing procedure.

To Remove the Amplifier from Case

1. Remove four screws holding amplifier and escutcheon to the case.
2. Unplug all connecting cables.
3. Lift the amplifier from the case.
4. To reassemble, reverse the foregoing procedure.

ADJUSTMENTS

Record-Playback Head Alignment

1. Thread a standard alignment tape on the transport as described under "Threading the Tape".
2. Connect an AC voltmeter to a standard phono plug and insert the plug into the Output jack.
3. Remove the head cover.
4. Insert a screwdriver through the hole in the head into the alignment screw.

5. Play the tape back at full volume, and rotate the alignment screw in either direction until the 10,000 cycle note gives the highest meter reading.

Brake Shoes

When brake shoes (34) and (80) become worn, loosen the mounting screws and rotate the shoes a few degrees until a new braking surface is exposed.

LUBRICATION

Lubricate the following parts every three months in heavy service, every six months in moderate service, or once a year in light service.

1. Supply and take-up reel spindle shafts, with two drops of light oil.
2. Rewind idler bearing and take-up idler bearing with one drop of light machine oil on each bearing.
3. Apply a liberal amount of light machine grease to the pressure roller bearing shaft. Replace the pressure roller and wipe away any excess grease.

4. Remove the thumbscrew (120) and 7 1/2 ips bushing (121) from the capstan. Place a few drops of oil in the oil hole in the capstan retaining ring. Allow the motor to run for a few minutes. Wipe away any excess oil and replace the bushing.
5. Place a small amount of grease on the index counter worm gear.
6. Apply a liberal amount of machine grease to each roller on all levers and cams.
7. Disassemble the motor and saturate the upper and lower oil pads. Clean away all excess oil.

CLEANING

Most defects, other than wear or breakage, can be traced to dirty surfaces with which the tape makes contact. The Record-Playback head, capstan and pressure roller may accumulate a coating of residue

which is worn off the tape as it passes these parts. Using a soft cotton cloth and alcohol, clean these parts periodically.

TROUBLE CHART

Symptom	Cause	Remedy
Motor does not run.	1. AC cord disconnected. 2. Fuse blown. 3. Defective motor.	1. Connect AC cord. 2. Replace fuse. 3. Replace motor.
Noisy playback or poor high frequency response.	1. Heads misaligned. 2. Head magnetized.	1. See "Record-Playback Head Alignment". 2. Demagnetize head.
Wow or flutter at 7 1/2 ips speed.	1. Speed change bushing (121) slipping on shaft.	1. Tighten screw (120).
Insufficient drive at 7 1/2 or 3 3/4 ips speed.	1. Defective main drive idler wheel (31). 2. Oil on capstan. 3. Defective capstan drive belt (118). 4. Drive motor (124) defective.	1. Replace main drive idler wheel (31). 2. See "Cleaning". 3. Replace belt (118). 4. Replace drive motor (124).
Tape spills when going from Rewind or Forward to Stop.	1. Reel diameters unequal. 2. Brake shoes (34) and (80) worn or out of adjustment.	1. Tape reels must have the same diameter. 2. Replace or adjust brake shoes (34) and (80).
Index Counter does not function.	1. Counter belt (127) worn or broken.	1. Replace counter belt (127).
No takeup or fast forward.	1. Forward idler tension spring (32) disconnected or broken.	1. Connect or replace Forward idler tension spring (32).
No tape movement in Play or Record mode.	1. Pressure roller tension spring (51) broken.	1. Replace pressure roller tension spring (51).

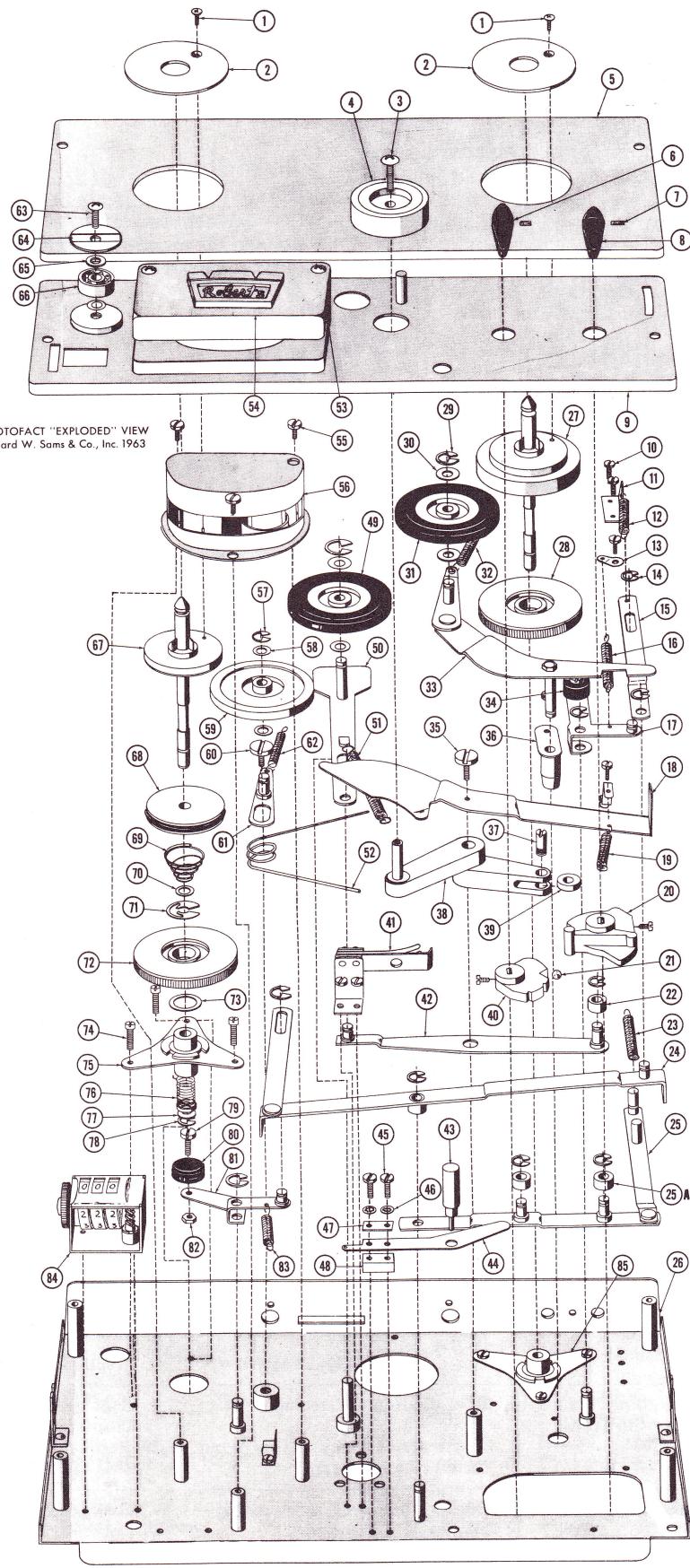


Fig. 3. Exploded View of Parts Above Baseplate.

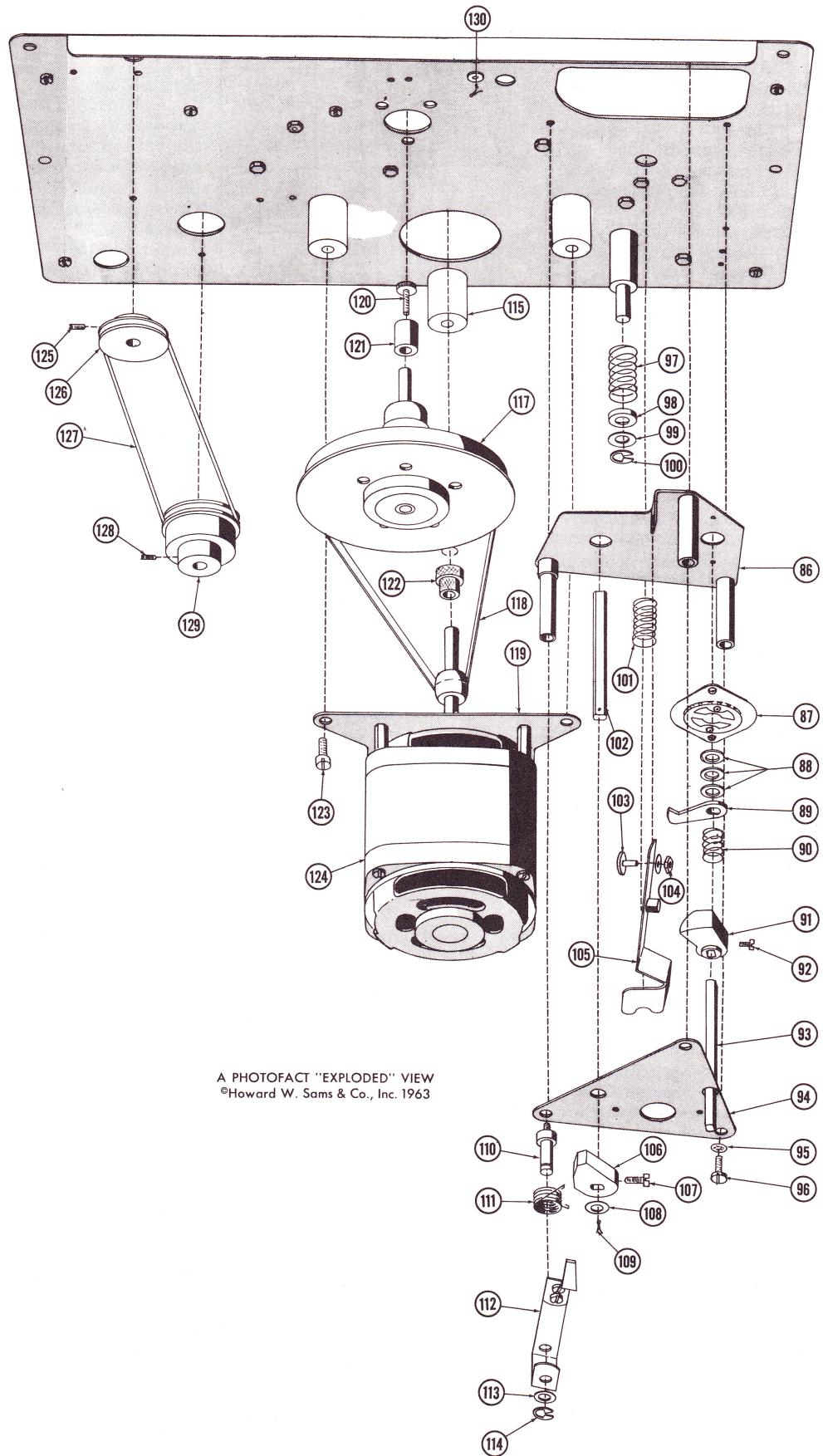


Fig. 4. Exploded View of Parts Below Baseplate.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	50-43	Screw, Reel Table	63	50-44	Screw, Tape Guide
2	50-15	Reel Table	64	50-20	Tape Guide Top Plate
3	50-47	Screw	65	50-45	Tape Guide Washer
4	52-27	Pressure Roller	66	50-63	Tape Guide Ball Bearing
5	50-16	Transport Deck Panel	67	52-46	Supply Spindle Ass'y. (Complete)
6	50-22	Knob, Play-Record	68	52-06	Supply Spindle Rubber Tire
7		Set Screw	69	52-42	Spring, Conical Spindle
8	50-22	Knob, Rewind-Forward	70		Washer
9	50-17	Control and Head Panel	71		Retaining Ring
10		Screw	72		Splined Roller (Part of 67)
11	50-29	Spring Bracket	73		Washer
12	50-90	Spring, Brake Activating Lever	74		Screw
		Load	75		Spindle Mounting Plate
13		Tie Lug	76	50-65	Spring, Supply Spindle Load
14		Retaining Ring	77		Washer
15	50-79	Lever, Take-up Brake	78		Retaining Ring
16	50-81	Spring, Take-up Spindle Brake	79		Screw, Brake Shoe Mounting
		Tension	80	50-77	Take-up Spindle Brake Shoe
17	50-08	Take-up Brake Assembly (Includes Shoe & Bracket)	81	50-75	Lever, Supply Spindle Brake Link
18	52-23	Pause Lever	82		Brake Shoe Nut
19	52-12	Spring, Pause Lever Tension	83	50-76	Spring, Supply Spindle Brake Load
20		Rewind-Forward Operating Cam	84	50-07	Index Counter Assembly
21		Steel Ball	85		Take-up Spindle Mounting Plate
22		Rewind-Forward Control Pivot	86		Control Assembly Bracket
		Roller	87		Rewind-Forward Detent
23	50-89	Spring, Forward Idler Lever	88		Washer, Fiber
		Release	89		Cam
24	50-78	Lever, Brake Operating	90		Spring
25	50-87	Lever, Forward Idler Operating	91		Idler-Lift Operating Cam
26		Tape Deck Baseplate	92		Set Screw
27	50-03	Take-up Spindle (Complete)	93		Rewind-Forward Control Shaft
28		Splined Roller (Part of 27)	94		Control Assembly Bottom Plate
29		Retaining Ring	95		Lockwasher
30		Washer	96		Screw
31	52-04	Main Drive Idler Wheel	97	50-66	Spring, Take-up Spindle Load
32	50-92	Spring, Forward Idler Tension	98	50-38	Spindle Spring Retaining Cap
33	50-82	Lever, Forward-Take-up Idler	99		Washer, Flat
		Pivot Bar	100	50-53	Retaining Ring
34	50-77	Brake Shoe	101	50-97	Spring, Forward Idler Lift Load
35		Screw	102		Play Control Shaft
36	52-66	Take-up Arm Pivot	103		Screw
37		Screw, Roller Securing	104		Nut
38	52-43	Lever, Pressure Roller Pivot	105		Lever, Idler Lifting
39	50-85	Roller	106		Amplifier Switch Bar Control Cam
40		Play-Record Operating Cam	107		Screw
41		Shorting Switch	108		Washer
42	52-08	Lever, Rewind Activating	109		Cotter Pin
43	51-77	Record Lock Button	110	52-79	Screw, Amplifier Switch Bar
44	51-06	Spring, Record Lock Blade	111	51-01	Spring, Amplifier Switch Slide
45	50-57	Screw, Record Lock	112	50-99	Bar Tension
46		Lockwasher	113		Bar Lever, Amplifier Switch
47		Insulator	114		Operating
48		Insulator	115		Washer, Fiber
49	52-04	Rewind Idler Wheel	116		Retaining Ring
50	52-07	Lever, Rewind Positioning	117	51-75	Rubber Motor Mount
51	52-26	Spring, Pressure Roller Tension	118	52-53	Flywheel and Capstan Assembly
52	52-11	Spring, Rewind, Drive Wheel	119	52-03	Capstan Drive Belt
		Tension	120	50-34	Motor Mounting Plate
53	50-48	Screw, Head Cover	121	52-45	Speed Change Bushing Thumbscrew
54	53-93	Head Cover	122	52-44	Speed Change Bushing
55	50-55	Screw, Head Mounting	123	51-94	Knurled Motor Bushing
56	52-90	Head Assembly (Full Track)	124	50-55	Screw, Motor Mounting
57		Retaining Ring	125	50-14	Drive Motor
58		Washer	126		Set Screw
59	52-05	Rewind Intermediary Wheel	127	50-67	Index Counter Pulley
60		Screw	128	50-68*	* Index Counter Belt
61	52-82	Bracket, Rewind Intermediary	129		Set Screw
		Idler	130	50-69	Index Counter Spindle Pulley
62	52-10	Spring, Rewind-Idler Release			Cotter Pin

* WALSCO Replacement Part # 1410-54

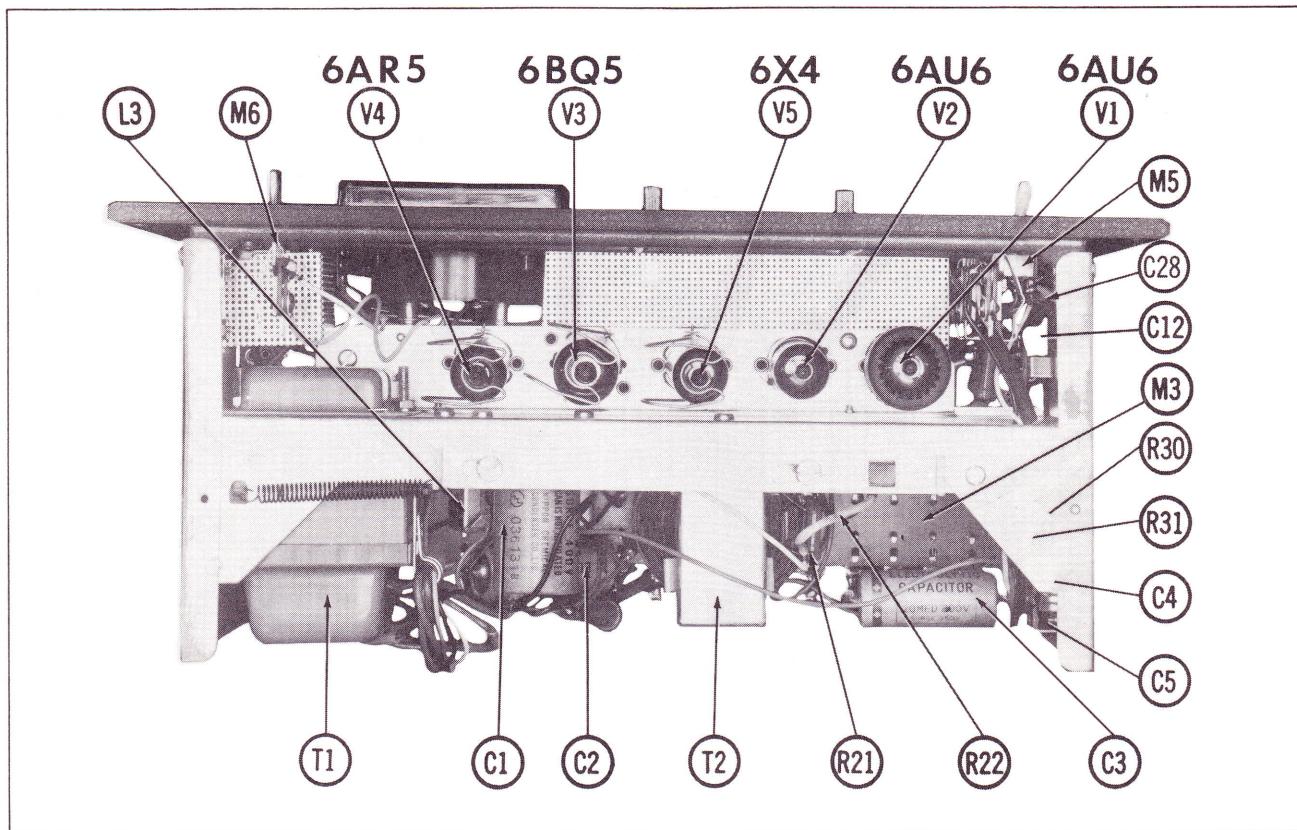


Fig. 5. Top View of Amplifier Chassis.

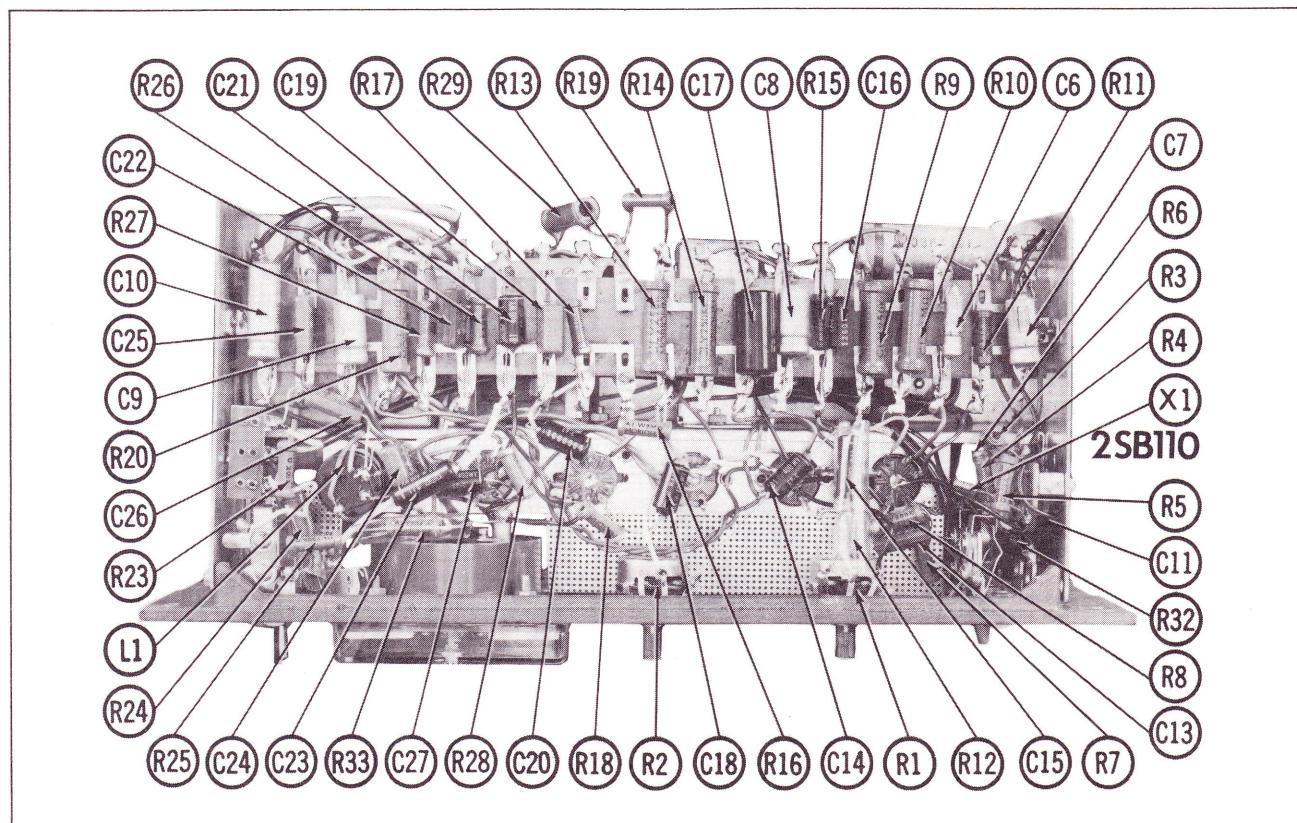
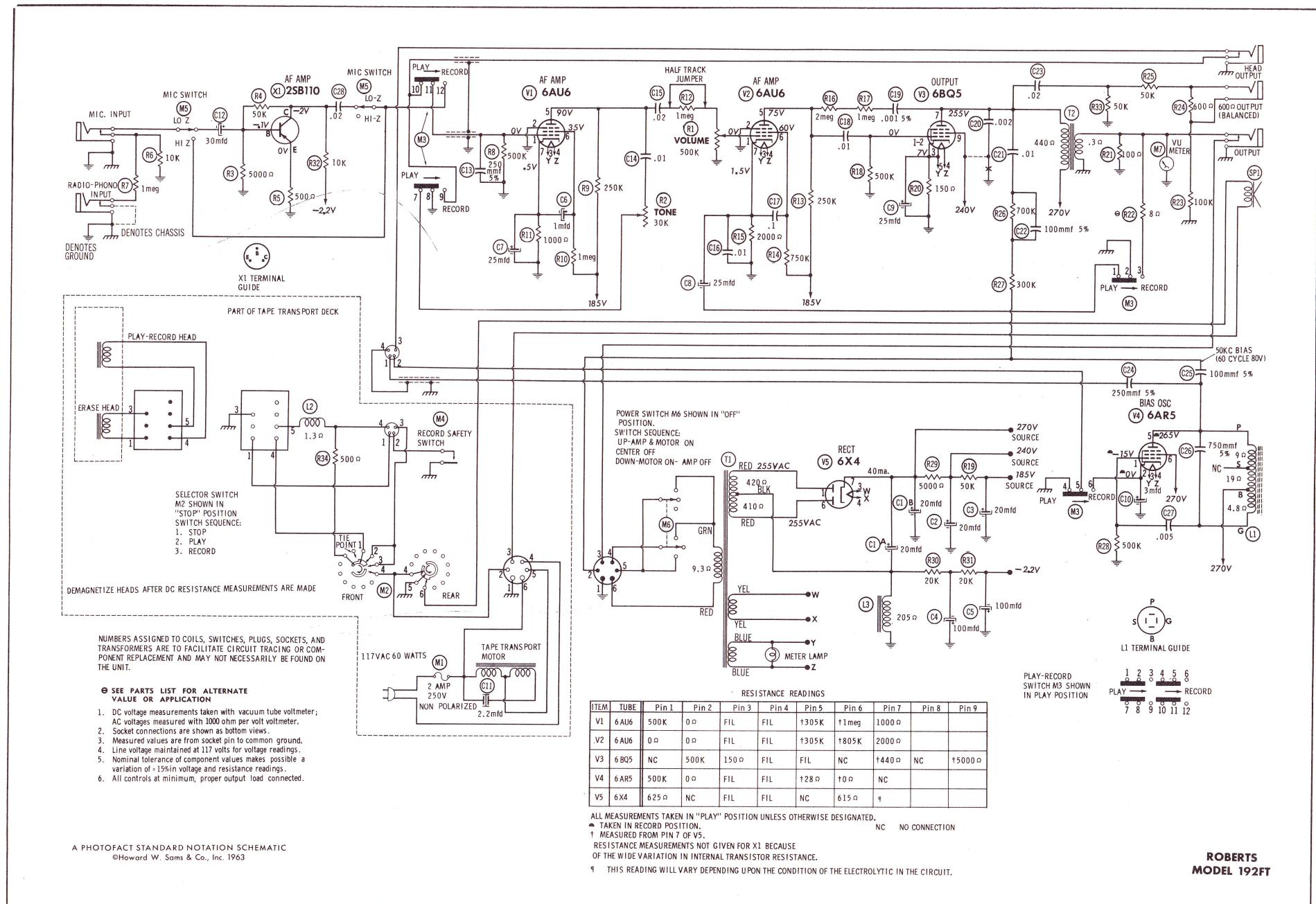


Fig. 6. Bottom View of Amplifier Chassis.



AMP PARTS LIST AND DESCRIPTION

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Power Cord	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft. 17109 (Plastic) or 17129 (Rubber) - 9 Ft.
Power Cord (Interlock Type)	Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401 or 8421
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor-Unshielded) 8429 (Two Conductor-Shielded) 8419 (Three Conductor-Shielded)

TUBES

ITEM No.	AMPEREX		GENERAL ELECTRIC		RCA		RAYTHEON		SYLVANIA	
	USE	TYPE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.
V1	AF Amplifier	6AU6	6AU6	V4	Bias Oscillator	6AR5				
V2	AF Amplifier	6AU6	6BQ5	V5	Rectifier	6X4				
V3	Output									

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2SB110	AF Amplifier	DS26	GE-2	2N406	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		ROBERTS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	REPLACEMENT DATA			
	CAP.	VOLT.				GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	20	350	51-23	PRS2380	BR20-350	QT2-6	TCD65	TDLD-28	TVAS-2635*
B	20	350			QT1-9	TC65	TD-20-350	TVA-1608	
C2	20	300	51-18	PRSI735	BR20-350	QT1-9	TC65	TD-20-350	TVA-1608
C3	20	300	51-18	PRSI735	BR20-350	QT1-9	TT15X100	MLV100-15	TE-1162
C4	100	15	54-08	PTT73	NLW100-15	MT1-19	TT15X100	MLV100-15	TE-1162
C5	100	15	54-08	PTT73	NLW100-15	MT1-19	TT15X100	MLV100-15	TE-1162
C6	1	150	52-98	PRSI700	NLW1-150	MT1-2	TT150X1	MLV1-150	TE-1500
C7	25	25	51-14	PTT82	NLW25-25	MT1-11	TT25X25	MLV25-25	TE-1207
C8	25	25	51-14	PTT82	NLW25-25	MT1-11	TT25X25	MLV25-25	TE-1207
C9	25	25	51-14	PTT82	NLW25-25	MT1-11	TT25X25	MLV25-25	TE-1207
C10	3	350	51-21	PRSI600	BR4-350	QT1-2.1	TT25X25	MLV25-25	TE-4-350
C11	2.2	300VAC		RY-664A	KGNT-3020		TC595	TD-4-350	TVAS-1601
C12	30	6	54-07						CR3020

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	250	5%		1469-00025	TCZ-240	22R5T25	CM-19B-251J	MCE240	MS-325
C14	.01	400V		P488N-01	D6-103	CUB451	4DP-1-103	GEM-411	4TM-S10
C15	.02	400V		P488N-02	DD-203	CUB452	4DP-2-203	GEM-412	4TM-S20
C16	.04	400V		P488N-01	D6-103	CUB451	4DP-1-103	GEM-411	4TM-S10
C17	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C18	.01	400V		P488N-01	D6-103	CUB451	4DP-1-103	GEM-411	4TM-S10
C19	.001	5%		1469-001		5R5D1	CM-19B-102J	MCJ255	MS-21
C20	.002	400V		P488N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C21	.004	400V		P488N-02	D6-103	CUB451	4DP-1-103	GEM-411	4TM-S10
C22	100	5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C23	.02	400V		P488N-02	DD-203	CUB452	4DP-2-203	GEM-412	4TM-S20
C24	250	5%		1469-00025	TCZ-240	22R5T25	CM-19B-251J	MCJ240	MS-325
C25	100	5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C26	750	5%		1469-00075		5R5T75	CM-19B-751J	GEM-625	MS-375
C27	.005	400V		P488N-005	D6-502	CUB6D5	6DP-1-502		6TM-D50
C28	.02	400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	USE	RESIST-ANCE	REPLACEMENT DATA				
			ROBERTS PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume	500K	51-97	B-60			
R2	Tone	30K	51-53	B-25			

ROBERTS
MODEL 192T

FOLDER 15

AMP PARTS LIST AND DESCRIPTION (CONTINUED)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R3	5000Ω				R19	50K			
R4	50K				R20	150Ω			
R5	500Ω				R21	100Ω			
R6	10K				R22	8Ω			
R7	1meg				R23	100K			
R8	500K				R24	600Ω			
R9	250K				R25	50K			
R10	1meg				R26	700K			
R11	1000Ω				R27	300K			
R12	1meg				R28	500K			
R13	250K				R29	5000Ω			
R14	750K				R30	20K			
R15	2000Ω				R31	20K			
R16	2meg				R32	10K			
R17	1meg				R33	50K			
R18	500K				R34	500Ω			

Note 1. Flexible Wire Wound.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ROBERTS PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	Bias Osc.	51-35					
L2	Hum Bucking						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	ROBERTS PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	
L3	.045A	205Ω	.7H	52-20	C-2975	C-1709	20C84	C-4X

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	ROBERTS PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117V @ .33A	510VCT @ .045A	6.3V @ .6A	51-57					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 2.7A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ROBERTS PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5400Ω	6-8Ω	51-58	A-3019	A-3823	24S07	S-54X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ROBERTS PART No.	QUAM PART No.	
SP1	5" x 7"	PM	6-8Ω	51-70	57A21Z8	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ROBERTS PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002 (3AG 2A 250V)	357001	AGC 2	4405

MISCELLANEOUS

ITEM No.	PART NAME	ROBERTS PART No.	NOTES
M2	Switch		
M3	Switch		
M4	Switch		
M5	Switch	53-94	Selector, Stop-Play-Record (Rotary Type)
M6	Switch	90-06	Record-Playback (Slide Type)
M7	Meter, VU	54-13	Record Safety (Leaf-Type)
			Hi Z Mic. - Lo-Z Mic (Toggle)
			Power (3-Position Toggle)